

REMARKS/ARGUMENTS

Reconsideration and allowance of this application are respectfully requested.
Currently, claims 1-3, 6-18 and 21-26 are pending in this application.

Objection to the Drawings:

In the attached replacement sheet of drawings, item 1 illustrated in Fig. 9 has been relabeled as "PABX." Applicant therefore requests that the objection to the drawings be withdrawn.

Objection to the Claims:

Claim 26 was objected to under 37 CFR 1.75(a) because the meaning of the phrase "the speech recognition apparatus" was unclear. By this Amendment, the phrase "the speech recognition apparatus" has been changed to --the pattern recognition apparatus-- in accordance with the Examiner's helpful suggestion. Applicant therefore requests that the objection to claim 26 be withdrawn.

Rejections Under 35 U.S.C. §102 and §103:

Claims 1-3, 6-7, 11-12, 15-18 and 21-24 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Klovstad (U.S. '092). Applicant respectfully traverses this rejection.

For a reference to anticipate a claim, each element must be found, either expressly or under principles of inherency, in the reference. Applicant submits that Klovstad fails to disclose each element of the claimed invention. For example, Applicant submits that Klovstad fails to disclose or even suggest "applying the data sequence to a set comprising

active models in a network of models including at least one model; selecting a subset of the outputs of the members of said set according to a predetermined criterion;... and assessing each state of members of said set and deactivating those states that do not meet a predetermined criterion, between the applications of successive data sequence elements.” Independent claims 15 and 16 each requires similar features.

The present invention therefore requires two different predetermined criteria. A first predetermined criterion is used to select a subset of models for which further models dependent on the members of the subsets are then added (see the “applying” and “selecting” steps in claim 1 noted above), and a second predetermined criterion is used to determine whether or not states of any particular model should be deactivated (see the “assessing” step in claim 1 noted above).

The Office Action appears to express a lack of appreciation of the distinction between these two predetermined criteria. In the present invention, the first predetermined criterion (used in the “applying” and “selecting” steps of claim 1) relates to whether or not whole models will be added to the pattern recognition process, whereas the second predetermined criterion (recited in the “assessing” step of claim 1) is used to determine whether particular states within existing models should be deactivated. This deactivation at the state level depending on the “second” predetermined criterion (i.e., the predetermined criterion recited in the “assessing” step) provides a more fine grained and therefore more computationally efficient recognition pruning. That is, deactivation at the state level depending on the (second) predetermined criterion is a much more fine grain

approach than activation or deactivation at the model level depending upon the (first) predetermined criterion. The present invention therefore relates to the inclusion of a second threshold criterion in the form of state level pruning in addition to a (first) threshold criterion which is performed at the model level.

Klovstad discloses that a word model is a linear sequence of acoustic “kernels” (cf. col. 15, ll. 1-3), and that an acoustic kernel is a single acoustic template pattern having a minimum and a maximum duration (cf. col. 15, ll. 3-5). Klovstad further describes that each acoustic kernel has a minimum duration of “ n ” samples, and is hence represented by n identical nodes 160 (cf. col. 15, ll. 15-18 and Fig. 6). Klovstad therefore appears to disclose that models in the form of acoustic kernels can comprise individual states in the form of the n identical nodes.

With respect to how the above described acoustic kernels are used in the recognition process, however, col. 16, ll. 5-29 of Klovstad describes the dynamic programming process which is performed. In particular, at each frame time each “active” kernel in a word on each grammar is processed to determine the likelihood of similarity of the acoustic template represented by that active kernel with the presently input frame, and a minimum score for the word at that frame time is determined (cf. col. 16, ll. 9-12). If the minimum score for the word is greater than a predetermined threshold, the word is deactivated (cf. col. 16, ll. 13-15). In contrast, if the score is less than the activation threshold, and not all of the kernels of a word are active, the next kernel of the word is

made active (cf. col. 16, ll. 22-25). This latter activation step is similar to the “selecting” and “adding” steps of claim 1.

However, Klovstad fails to further disclose “assessing each state of members of said set and deactivating those states that do not meet a predetermined criterion, between the applications of successive data sequence elements,” as required by claim 1. Col. 16, ll. 63-68 of Klovstad specifies that if the minimum score for a word is greater than the deactivation threshold, then all kernels of the word are made inactive except for the first one. This is described as reducing the required programming computations. However, the deactivation (see col. 16, ll. 13-18) is the deactivation of kernels, each kernel being an entire acoustic model (see col. 15, ll. 3-5). Klovstad therefore only ever describes deactivating at the model level, and makes no mention of deactivating individual nodes within any particular acoustic kernel. In contrast, claim 1 requires that the individual states of models are assessed and those states that do not meet a predetermined criterion are deactivated. Thus, claim 1 requires that deactivation of individual model states can occur, which is a much more fine grained approach than mere deactivation of the whole models, as in Klovstad. Similar comments apply to claims 15-16.

Accordingly, Applicant submits that claims 1-3, 6-7, 11-12, 15-18 and 21-24 are not anticipated by Klovstad. Applicant therefore respectfully requests that the rejection of these claims under 35 U.S.C. §102 be withdrawn.

Claims 8-10 were rejected under 35 U.S.C. §103 as allegedly being unpatentable over Klovstad in view of Tsuji et al (U.S. '057, hereinafter “Tsuji”). Claims 13-14 and

HOVELL et al.
Application No. 09/529,384
June 23, 2004

25-26 were rejected under 35 U.S.C. §103 as allegedly being unpatentable over Klovstad in view of O'Brien (U.S. '489). Neither Tsuji nor O'Brien remedy the above-described deficiencies of Klovstad. Applicant therefore respectfully requests that the rejections under 35 U.S.C. §103 be withdrawn.

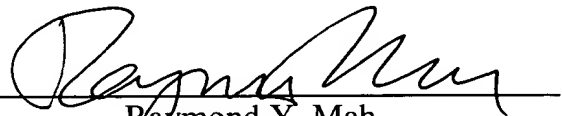
Conclusion:

Applicant believes that this entire application is in condition for allowance and respectfully requests a notice to this effect. If the Examiner has any questions or believes that an interview would further prosecution of this application, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

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By: _____



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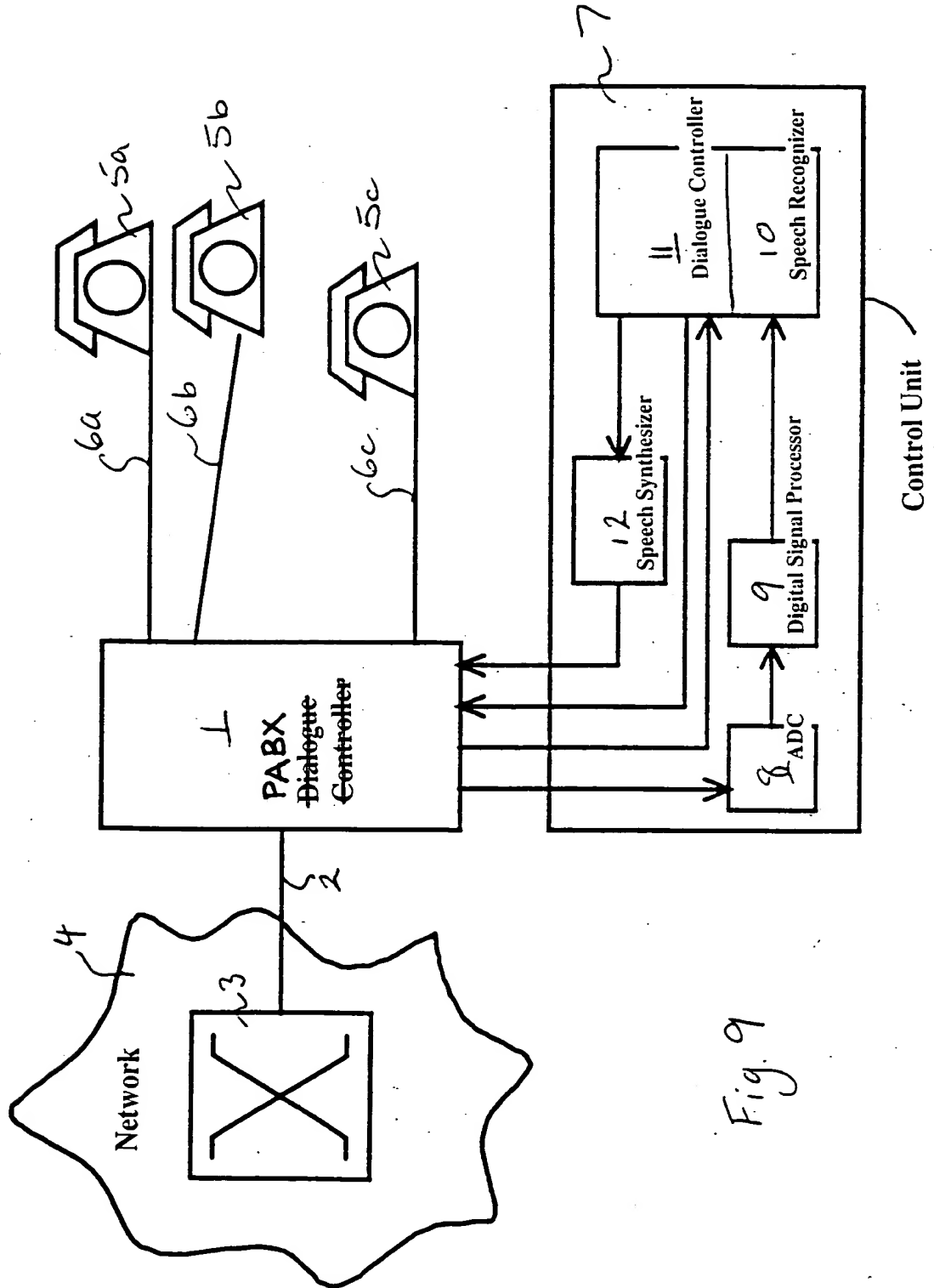


Fig. 9